

Advisory Committee Meeting #4

April 28, 2010

North San Francisco Bay Selenium TMDL

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Presentation Overview



- AC & TRC activities
- Main achievements
- TRC conclusions
- Scientific and regulatory uncertainties
- Next steps



AC & TRC Activities



- AC Meeting #1 Dec 2007 – TMDL process
- AC Meeting #2 April 2008 – Preliminary results
- **TRC Meeting May 2008** – Conceptual model
- AC Meeting #3 Sep 2008 – Numeric targets
- **TRC Meeting April 2009** – Modeling framework
 - TRC conference call Oct 2009
- AC Meeting #4 April 2010 – Decision point

Technical Reports



- TM-2 Source Assessment
- TM-3 Toxicological Summary
- TM-4 Conceptual Model
- TM-5 Model Selection
- **TM-6 Selenium Model**
- Preliminary Project Report (July 2010)

Consensus Reached



- Model is robust
- Reflects the current state of knowledge
- All available data used in development, calibration and validation of the model
- Scenarios allow examination of model performance
- Provides details of the underlying assumptions and identifies potential limitations

Uncertainties



- Speciation data
- Particulate selenium
- Characterization of boundary conditions
- Draft aquatic life criterion: fish tissue
- Few dietary exposure toxicity studies
- Toxicity thresholds established in freshwater
- Procedures for translation of fish tissue

TMDL Delays



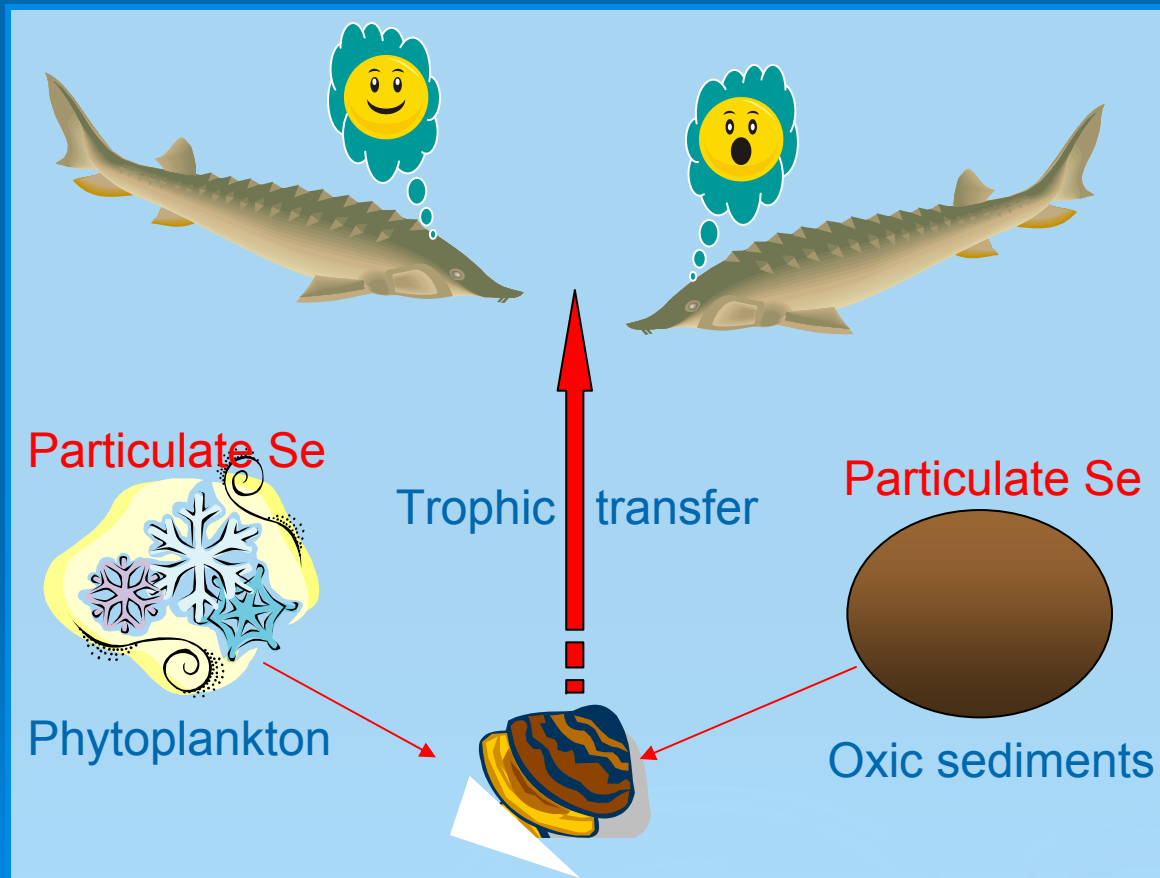
➤ System changes since 1999

- selenium concentrations in biota appear to decline
- more data needed to confirm and explain trends

➤ Riverine inputs dominate selenium loading into the North Bay

- data needed to:
 - improve the accuracy of riverine selenium estimates
 - clarify the effect of the background selenium loads
 - determine relative importance of refineries' load and speciation during dry conditions

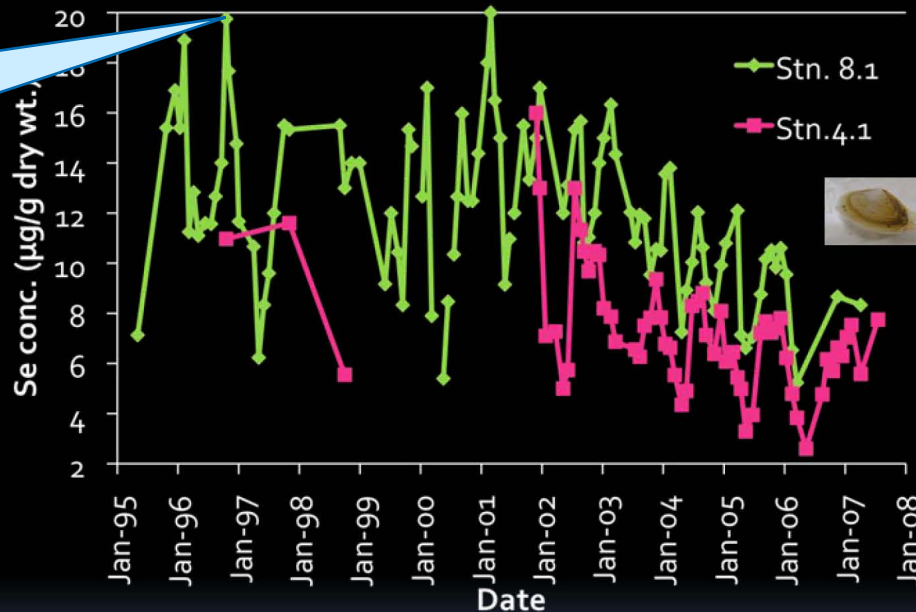
Food Web Model



**Back to
Basics**

Selenium in *C. amurensis*

We've
seen the
worst



As good as
it gets?

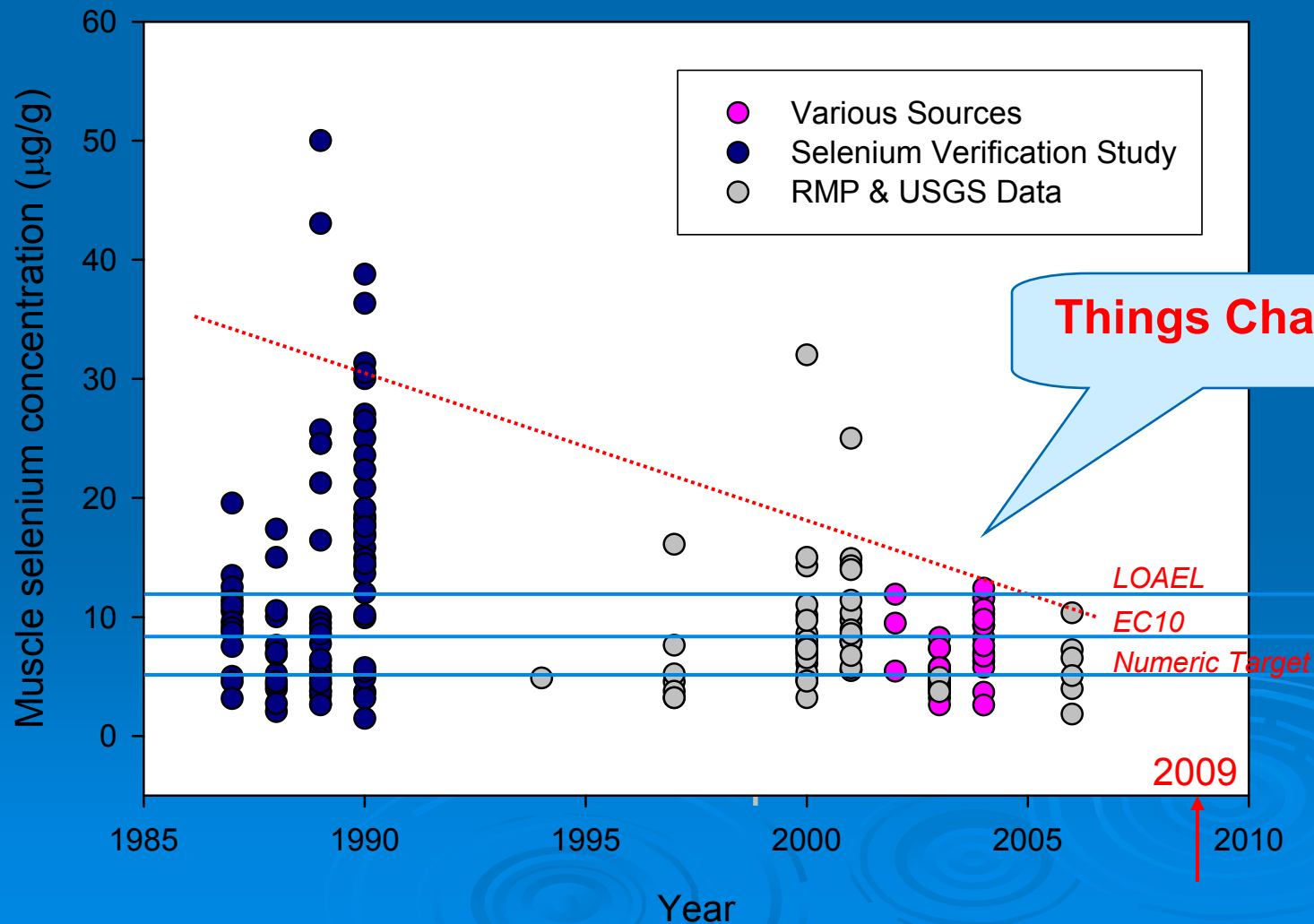
C. Fluminea
1.4--4.8 µg/g



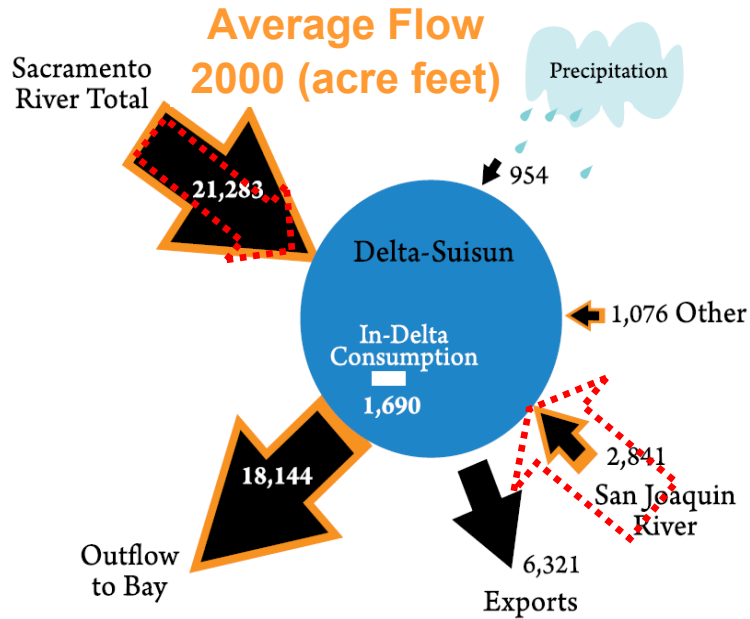
Source: USGS, 2009

Density per m²:
Late 80s – 20K +
1990s – 16K to 10K
2000s – 0 to 600

Selenium in Sturgeon

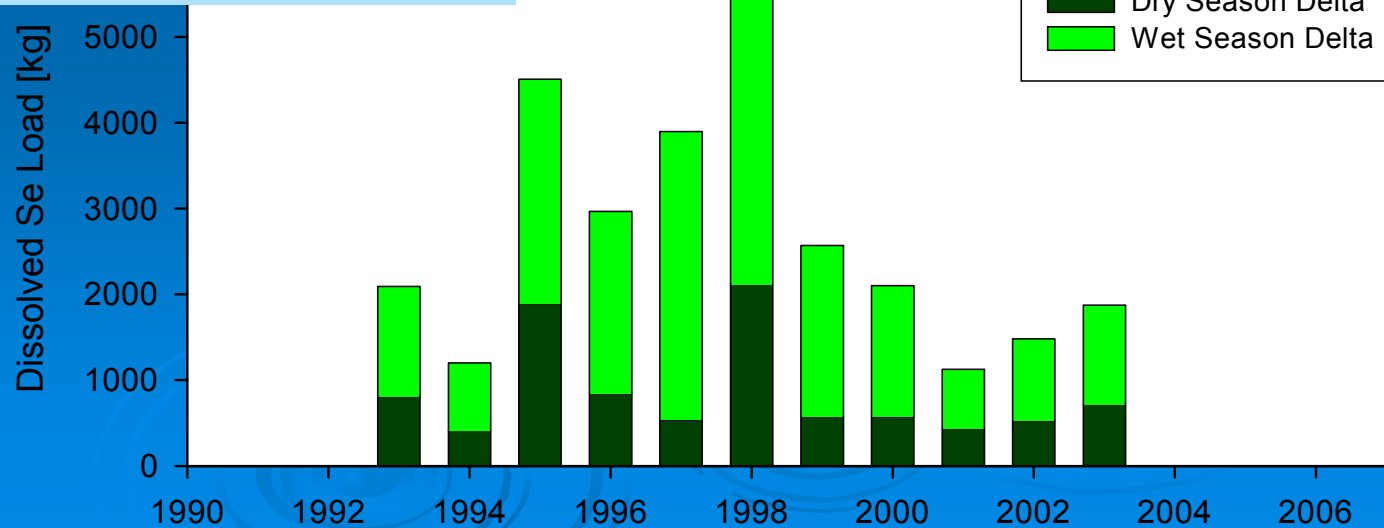


Riverine/Delta Selenium Load



**Particulate Se
The Big Unknown !**

Delta Outflow



How To Move Forward



- New data and monitoring efforts
 - RMP 2009 sport fish status and trends results
 - USGS scientific report on bivalves
 - Largemouth bass data from the Bay Delta
- Effluent and receiving water selenium characterization study
 - Spatially distributed speciation and particulate data
- California and nation-wide efforts to develop selenium criteria

Next Steps



- Use model results to investigate dissolved to particulate concentration ratios and how they change with hydrologic conditions
 - Translate numeric target to water column concentrations
- Synthesize and integrate all technical analyses
 - Preliminary Project Report (July 2010)
- Summarize new data and analyses and re-evaluate TMDL options (2011) – **Decision Point**
- Basin Plan amendment (2012/13)

QUESTIONS

